

Title (en)

CARBURIZATION-RESISTANT METAL MATERIAL AND USES OF THE CARBURIZATION-RESISTANT METAL MATERIAL

Title (de)

AUFKOHLUNGSRESISTENTES METALLMATERIAL UND ANWENDUNGEN DES AUFKOHLUNGSRESISTENTEN METALLMATERIALS

Title (fr)

MATIÈRE MÉTALLIQUE RÉSISTANTE À LA CÉMENTATION ET UTILISATIONS DE LA MATIÈRE MÉTALLIQUE RÉSISTANTE À LA CÉMENTATION

Publication

EP 2725112 B1 20180808 (EN)

Application

EP 12802133 A 20120529

Priority

- JP 2011139994 A 20110624
- JP 2012063696 W 20120529

Abstract (en)

[origin: EP2725112A1] There is provided a carburization resistant metal material suitable as a raw material for cracking furnaces, reforming furnaces, heating furnaces, heat exchangers, etc. in petroleum and gas refining, chemical plants, and the like. This metal material consists of, by mass%, C: 0.03 to 0.075%, Si: 0.6 to 2.0%, Mn: 0.05 to 2.5%, P: 0.04% or less, S: 0.015% or less, Cr: higher than 16.0% and less than 20.0%, Ni: 20.0% or higher and less than 30.0%, Cu: 0.5 to 10.0%, Al: 0.15% or less, Ti: 0.15% or less, N: 0.005 to 0.20%, and O (oxygen): 0.02% or less, the balance being Fe and impurities. The metal material may further contain one kind or more kinds of Co, Mo, W, Ta, B, V, Zr, Nb, Hf, Mg, Ca, Y, La, Ce and Nd.

IPC 8 full level

C21D 6/00 (2006.01); **C22C 30/02** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01);
C22C 38/34 (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01);
C22C 38/52 (2006.01); **C22C 38/54** (2006.01); **C22C 38/58** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP KR US)

C21D 6/004 (2013.01 - EP US); **C22C 30/02** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/002** (2013.01 - EP US);
C22C 38/005 (2013.01 - EP KR US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US);
C22C 38/34 (2013.01 - EP US); **C22C 38/42** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP US);
C22C 38/48 (2013.01 - EP US); **C22C 38/50** (2013.01 - EP US); **C22C 38/52** (2013.01 - EP US); **C22C 38/54** (2013.01 - EP US);
C22C 38/58 (2013.01 - EP KR US); **F28F 21/083** (2013.01 - EP US)

Citation (examination)

JP H1018004 A 19980120 - SUMITOMO METAL IND

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 2725112 A1 20140430; EP 2725112 A4 20160309; EP 2725112 B1 20180808; BR 112013025511 A2 20171114;
BR 112013025511 B1 20190507; CA 2830155 A1 20121227; CA 2830155 C 20151229; CN 103620077 A 20140305;
CN 103620077 B 20160203; DK 2725112 T3 20181126; ES 2688672 T3 20181106; JP 5177330 B1 20130403; JP WO2012176586 A1 20150223;
KR 101567183 B1 20151106; KR 20140005357 A 20140114; RU 2553136 C1 20150610; US 10233523 B2 20190319;
US 2014127073 A1 20140508; WO 2012176586 A1 20121227; ZA 201307153 B 20140625

DOCDB simple family (application)

EP 12802133 A 20120529; BR 112013025511 A 20120529; CA 2830155 A 20120529; CN 201280031282 A 20120529;
DK 12802133 T 20120529; ES 12802133 T 20120529; JP 2012063696 W 20120529; JP 2012524983 A 20120529; KR 20137032064 A 20120529;
RU 2014102241 A 20120529; US 201214129137 A 20120529; ZA 201307153 A 20130923